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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,885

05/18/2006

Holger Stark

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EXAMINER

BASKIN, JEREMY S

ART UNIT

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3753

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,885	Applicant(s) STARK ET AL.	
	Examiner Jeremy S. Baskin	Art Unit 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/18/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 16 and 29-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Taub (1,727,621).

3. In regard to Claim 16 and 30, Taub teaches a lightweight valve (Figure 3) for internal combustion engines (page 1, lines 1-3) possessing a valve stem 48, 50, a hollow valve cone 58, and a valve disk 52. The valve cone and valve disk together form a hollow space 80 and the valve disk is provided with a gripping receiver 54 for the valve stem.

4. In regard to Claim 29, the valve stem 48, 50, valve disk 52, and valve cone 58 are separate components (Figure 3). Since the valve stem and valve disk are directly connected, the valve cone is virtually free from forces acting on the valve disk during operation of the valve.

5. In regard to Claims 31 and 32, Taub teaches a method of manufacturing a valve by forming together a valve disk 52, 56 and gripping receiver 54 (page 2, lines 26-30), producing a valve stem 48, 59, and a valve cone 58. The valve disk and valve stem are connected by a material connection (page 2, lines 117-121). The valve cone is connected to both the valve stem and valve disk (page 2, lines 37-43) by a snap connection (page 2, lines 9-14). The valve cone is produced by a forming operation (stamping, page 2, lines 37-43).

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Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 17-20, 22, 23, 25, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taub in view of Cummings (2,439,240).

8. In regard to Claims 17-20 and 22, Taub fails to teach where the gripping receiver is formed by a plurality of reinforcing ribs rising inward towards the central axis of the valve disk and are arranged 120 degrees from one another. Taub fails to further teach the end face of the ribs faces a center of the valve disk and forms a wall portion of the gripping receiver.

9. Cummings discloses a hollow valve for internal combustion engines. Cummings teaches the gripping receiver 18b comprises a plurality of reinforcing ribs 18 on the valve disk 16 that extend out radially from the central axis 18c of the valve disk and are arranged at a spacing of 120 degrees from one another (col. 3, lines 2—30). An end face 13a faces a center of the valve disk 14 and forms a wall portion of the gripping receiver by each rib rising towards the center axis (Figure 1) and forming continuously into the inner wall of the valve stem 10.

10. At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate radial reinforcing ribs on a valve disk at a 120 degree separation arrangement with each rising to form a wall portion of a gripping receiver within an internal combustion valve, as taught by Cummings. The motivation to combine is to provide even internal support for a coolant containing hollow space.

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11. In regard to Claims 23, 25, and 26, Taub fails to teach where a linearly rising first portion of the reinforcing ribs is adjoined by a second rib portion complementing an inner wall of the valve cone and where there is a cutout reducing the size of the reinforcing ribs in the gripping receiver region.

12. Cummings teaches the reinforcing ribs 18a extend from a radially external end S to the direction of the center of the valve disk 18c so as to complement the inner wall 18a of the hollow valve cone. In effect, the reinforcing ribs are the summation of numerous linearly rising reinforcing ribs that are each adjoined tangential to the inner surface of the valve cone. The reinforcing ribs 23a and 28 are provided with a cutout 28a, 28b and S in the area of the gripping receiver 23b, respectively, so as to reduce the size of the reinforcing end faces (col. 5, lines 4-13).

13. At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate adjoined linearly rising reinforcing ribs with cutouts that complement an inner surface of valve cone, as taught by Cummings, so as to sufficiently support and connect a valve cone and valve disk and to allow coolant to fully occupy the created hollow space.

14. In regard to Claim 28, Taub fails to teach wherein the reinforcing ribs and the valve cone are interconnected by a material process.

15. Cummings teaches where the valve cone 10b and ribs 13 are cast and forged together (col. 1, lines 40-52).

16. At the time of the invention, it would have been obvious to one of ordinary skill in the art to connect a valve cone and reinforcing ribs together within an internal combustion valve, as

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taught by Cummings, so as to create a permanent heat conducting path between the two components.

17. Claims 21, 23 alternatively, 24, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taub in view Cummings, as applied to Claim 17 above, in further view of Blume (5,345,965).

18. In regard to Claims 21 and 23 alternatively, the combination of Taub in view of Cummings fails to teach wherein the reinforcing ribs are rectilinear strips.

19. Blume discloses a composite valve body. In Figure 1, Blume teaches where the reinforcing ribs 32, 34 are rectilinear in shape and rise linearly from a radially external end 40 towards the center 26 of the valve disk 22.

20. At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate the use of linearly rising rectilinear strips for the reinforcing ribs in a valve, as taught by Blume, so as to reduce the cross-sectional thickness and material cost of the valve while maintaining strength.

21. In regard to Claim 24, Taub in view of Cummings fails to teach wherein a linearly rising first portion of the reinforcing ribs is connected to a second reinforcing rib of constant height.

22. In Figure 1, Blume teaches a reinforcing rib 32 that is connected to a rib 33, 34 of constant height.

23. At the time of the invention, it would have been obvious to one of ordinary skill in the art to connect a rib of linearly increasing height to a rib of constant height, as taught by Blume, so as to create a viable supporting rib design through a molding process.

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24. In regard to Claim 27, Cummings teaches where the reinforcing ribs 18 bears against an inner wall 18a of the hollow valve cone 15b in sections 23b. However, Taub in view of Cummings fails to specifically teach where the reinforcing ribs possess an upper narrow side.

25. In Figure 1, Blume teaches narrow reinforcing ribs 32 and annular reinforcing rib 35, each of which comprise varying thicknesses.

26. At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate of reinforcing ribs of varying thicknesses, as taught by Blume, within a valve design so as to increase sectional stiffness of the valve body.

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Havelka et al. (3,156,259) teaches a valve with linearly adjoined reinforcing ribs that form a gripping receiver for a valve stem. Topham et al. (5,044,604) teaches a valve body with reinforcing ribs of varying thicknesses forming a gripping receiver for the valve stem.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy S. Baskin whose telephone number is (571) 270-7421. The examiner can normally be reached on Monday through Friday, 7:30AM to 5:00PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Huson can be reached on (571) 272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen M. Hepperle/
Primary Examiner, Art Unit 3753

/J. S. B./
Examiner, Art Unit 3753